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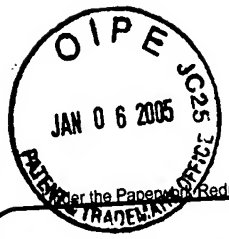

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission: 12

Application Number	10/820,043
Filing Date	8 April 2004
First Named Inventor	Bruno GIAMMARIA
Art Unit	3753
Examiner Name	A. Michael CHAMBERS
Attorney Docket Number	1620P01US01

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
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- ☐ Information Disclosure Statement
- ☑ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
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  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below):
  Patent Office letter dated January 4, 2005.

Remarks

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	SHAPIRO COHEN		
Signature			
Printed name	Dennis S.K. Leung		
Date	4 January 2005	Reg. No.	47,325

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File No.: 1620P01US01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/820,043
Applicant	:	Bruno GIAMMARIA
Filed	:	April 8, 2004
Title	:	Hot Water Circulating System
Group Unit	:	3753

January 4, 2005

U.S. Patent & Trademark Office
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Arlington, VA 22202
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Sir:

If any charges or fees must be paid in connection with the following communication, they may be paid out of deposit account No. 16-0600.

Enclosed is a copy of the corresponding Canadian application No. 2,425,237, certified by the Canadian Patent Office and submitted herewith pursuant to 35 USC 119 and by the International Convention for Protection of Industrial Properties and by similar treaties.

Respectfully submitted,

Dennis S.K. Leung
Reg. No. 47,325

DSKL:TD:ds
Enclosures

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Canadian Patent Office

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This is to certify that the documents attached hereto and identified below are true copies of the documents on file in the Patent Office.

Specification and Drawings, as originally filed, with Application for Patent Serial No: **2,425,237,** on April 11, 2003, by **BRUNO GIAMMARIA,** for "Hot Water Recirculating System".

CERTIFIED COPY OF
PRIORITY DOCUMENT

Agent certificateur/Certifying Officer

April 5, 2004

Date

Canada

(CIPO 68)
04-09-02

OPIC CIPO

1620P01CA01

Abstract

A hot water circulating system to provide instant hot water including a hot water source connected to one or more fixtures and a hot water return line from the fixture to the hot water source including a check valve and a continuous circulation pump in the return line.

1620P01CA01

Hot Water Recirculating System

This invention relates to domestic hot water systems and more particularly a hot water recirculation system. The use of existing hot water systems causes millions of litres of drinking water to go down drains daily while people are waiting for hot water to get to the tap. This new system will provide hot water almost immediately, saving water, time, energy and the environment.

As described in US Patent numbers 5,042,524, 5,143,049 and 5,277,219 a considerable amount of water and thermal energy is wastefully dissipated from hot water lines connected to fixtures such as wash basins and showers if water is allowed to go to the drain while waiting for hot water to be delivered. The provision of a hot water return lines, check valves and a continuous circulating pump of this invention is not found in these patents.

Summary of the Invention

A hot water on demand system in accordance with this invention generally includes a hot water heater connected to a water supply line, a first hot water line connected to the hot water heater and one or more plumbing fixtures. The first hot water line provides for circulation of hot water from the hot water heater to the plumbing fixtures. A second line is connected to the first hot water line by a T adjacent each of the plumbing fixtures and to an inlet of the hot water heater. Pump means is provided for circulating hot water, in the first line adjacent the plumbing fixtures to return to the inlet of the heater.

A thermometer is provided adjacent the hot water heater check valves are also provided in the hot water return line and the cold water supply line.

Brief Description of the Drawings

Fig. 1 illustrates a hot water system.

Fig. 2 illustrates a hot water system for a different hot water tank.

Fig. 3 is a sectional view of a circulation pump for use with the system.

Fig. 4 is a sectional view of a check valve for use in the hot water system.

Detailed Description of the Drawings

Referring now in detail to the drawings Fig. 1 shows a hot water circulating system indicated generally by the numeral 1a the system 1a includes a water heater 1 connected to plumbing fixtures including a lavatory sink 2, a kitchen sink 3, a laundry tub 4 and a bath tub 5 by hot water lines 7. Suitable T fittings 7a provided on the hot water lines 7 adjacent each of the plumbing fixtures 2, 3, 4, and 5 connect the hot water return line 8 to the hot water lines 7.

The hot water return line 8 is connected at its other end to the intake 9 of the water heater 1. A modified connector 10a is provided including the existing drain valve 10.

A T connection is provided in place of the drain valve 10a and the original drain valve 10a is reinstalled together with the cold water line 13.

In Fig. 2 a different hot water tank is shown at 1b wherein the hot water line 7 and the cold water line 13 are connected to the top of the tank 1b. The hot water return line 8 is connected to a fitting provided at a lower portion of the hot water tank 1b. A ball type shut off valve 22 and a check valve 16 are provided in the line 8 adjacent the tank 1b. A circulatory pump 17 is provided in the return line 8 and a thermometer 21 allows reading of the temperature of the water in the hot water tank 1b and hot water system 1a.

The four ball valves 14, 15, 18, 22 installed on the hot water return line 8 and on hot water feed line 7 and on cold water feed line 13 allow the hot water system 1a to be completely isolated from the conventional hot water system. When replacement or maintenance of the hot water tank 1 or the circulating pump17 is required the valves can be closed, resulting in easy maintenance, as the whole water system does not have to be drained. The valves give full flow once in an position almost same size of the inside diameter of the pipe that being used 20mm check valve 12 serves to prevent hot water back flow into the cold water lines 13 when the hot water is not being drawn at any tap or in use. An air chamber 20 is also provided on the hot water line 7.

The 13mm check valve 12 or 16 prevent cold water from entering the connection at the bottom of the hot water tank 1 or 1b when hot water taps are in use because it creates negative pressure in the hot water return lines 8.

Insulating hot water lines 7, hot water return lines 8, air chambers 20, pump body and motor 17 and mixing valve bodies is recommended to prevent heat loss, banging noises and cracking noises.

Thermometers 21 may be provided to monitor the water temperature in the hot water tank, 1 or 1b the lines 7.

1620P01CA01

Claims

1. A hot water on demand system comprising a hot water heater connected to a supply of water.

   A first hot water line connected to the hot water heater and one or more plumbing fixtures for circulating hot water from the hot water heater to the plumbing fixtures.

   A second line connected to the first hot water line adjacent each of the fixtures and to an inlet of the hot water heater and pump means for circulating hot water from adjacent the fixtures through the second line to the heater.

2. A hot water on demand system as claimed in claim 1 having a one way check valve on the inlet of the hot water heater between the second line water supply.

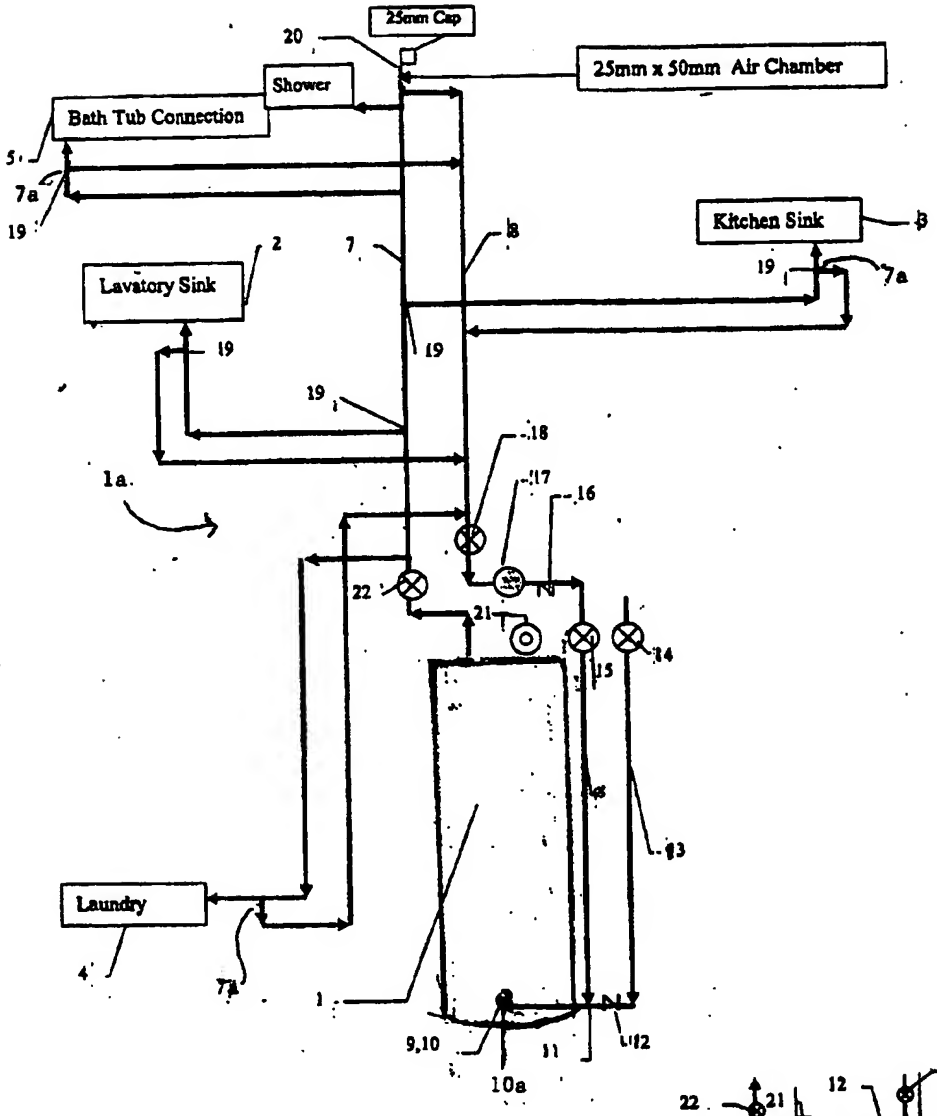
25mm Cap
20
25mm x 50mm Air Chamber
Shower
Bath Tub Connection
5
7a
19
Kitchen Sink
6
19
7a
2
7
8
Lavatory Sink
19
19
19
18
17
16
1a
22
21
14
15
13
Laundry
4
7a
1
9,10
11
12
10a

FIG 1

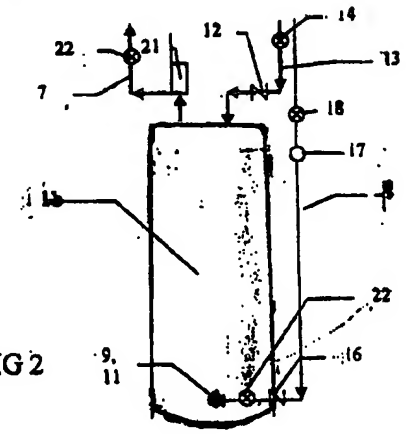
22
21
12
14
13
7
18
17
8
1a
22
9,
11
16

FIG 2

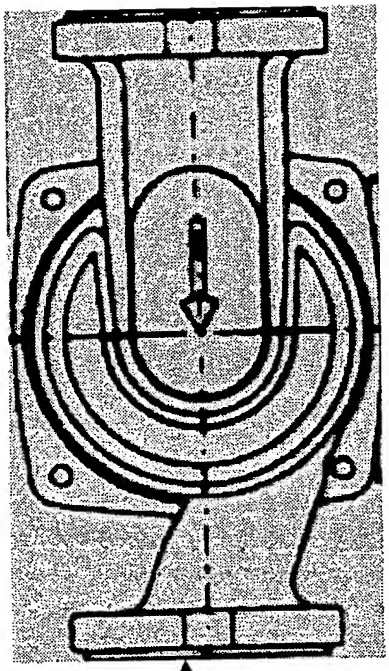

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Fig 3

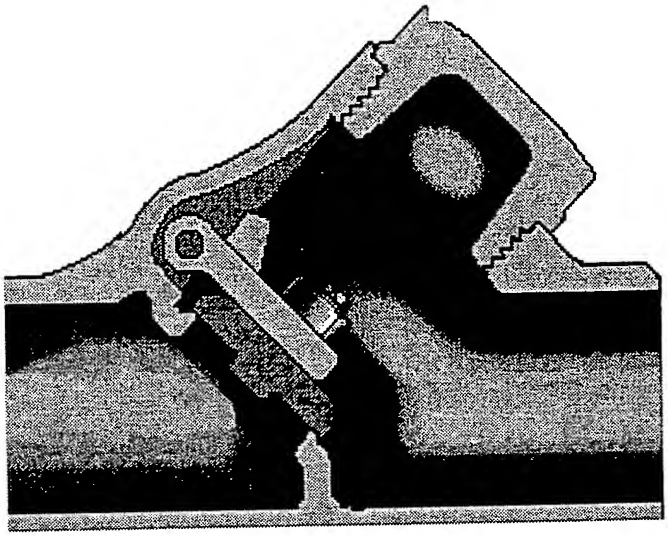

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Fig 4